

Appendix B: Potential Management Approaches and Possible Actions

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Introduction

This appendix describes the possible actions and potential management approaches and strategies the Flathead National Forest (NF) may undertake to make progress in achieving the desired conditions described in the plan. Management approaches and strategies presented in this section may include processes such as suggestions for on-the-ground implementation, analysis, assessment, inventory or monitoring, and partnership and coordination opportunities the forest is proposing as helpful to make progress in achieving its desired conditions. The potential approaches and strategies are not intended to be all-inclusive, nor commitments.

The 2012 Planning Rule requires land management plans to “...contain information reflecting proposed and possible actions that may occur on the plan area during the life of the plan, including: the planned timber sale program; timber harvesting levels; and the proportion of probable methods of forest vegetation management practices expected to be used (16 United State Code (U.S.C.) 1604(e)(2) and (f)(2)). Such information is not a commitment to take any action and is not a ‘proposal’ as defined by the Council on Environmental Quality regulations for implementing the National Environmental Policy Act (NEPA) (40 CFR 1508.23, 42 U.S.C. 4322(2)(C)). (36 CFR 219.7(f)(1)).”

This appendix includes a list of types of possible projects for the next 3 to 5 years to move toward the desired conditions and objectives. The possible actions are displayed as a brief summary of the types of possible projects expected. The types of actions described do not commit the Flathead NF to perform or permit those actions, but they are provided as possible actions that would likely be consistent with plan components, particularly the desired conditions and objectives.

The possible actions listed include exhibits of the possible timber sale program, timber-harvesting levels, and the proportion of probable methods of forest vegetation management practices expected to be used. The identification of possible actions could include an estimate of timber harvesting level, but does not include speculation about the specific amount, frequency, location, magnitude, or numbers of actions during the plan period. This appendix does not serve as a “to do” list of projects and expected dates in the plan. Potential management approaches included may be used to inform future proposed and possible actions. A plan may also include additional optional content, such as strategies and partnership opportunities or coordination activities.

Possible Forest Management Actions and Timber Harvest Levels

As required by the 2012 Planning Rule, this section identifies the possible actions and proportion of probable methods of forest vegetation management practices expected to be used to achieve desired timber harvesting levels and outputs. The identification of possible actions includes an estimate of timber harvesting levels anticipated over the next 1 to 2 decades, but does not include speculation about the specific amount, frequency, location, magnitude, or numbers of actions during the plan period.

Estimated acres of treatment and associated timber product outputs were determined through use of the Spectrum model. This model is an analytical tool used to evaluate vegetation management scenarios that achieve resource objectives. Among other things, the model provides an estimate of the level of timber products expected and the management practices applied to achieve that level, given a set of inputs that includes existing and desired vegetation conditions, budget and resource constraints, and expected vegetation change pathways.

Table B-1 displays the acres and probable treatments expected in the proposed action for the first decade of the plan period, estimated by management area group and treatment type. Production of sawtimber and other wood products is expected through commercial timber harvest activities, which includes even-aged

regeneration harvests (clearcut, seedtree, shelterwood), uneven-aged regeneration harvests (group selection) and intermediate harvests (commercial thin). Planned fire ignition (prescribed fire) is an additional method analyzed by the Spectrum model that contributes towards achieving desired vegetation conditions. The appropriate or optimum methods of harvest or other treatments would be based upon site-specific determinations, as evaluated and determined during project planning and documented in a silvicultural prescription.

Table B-1. Vegetation management practices by management area group, annual average acres for the first decade of the plan period

Management Area Group	Treatment Type	1st Decade (acres)
Not suitable for timber production or timber harvest	Planned Fire Ignitions	2,356
Not suitable for timber production, suitable for timber harvest	Planned Fire Ignitions	1,177
	Group Selection	371
	Regeneration harvest (even-aged)	0
	Intermediate harvest (commercial thin)	321
Suitable for timber production	Planned Fire Ignitions	1,423
	Group Selection	0
	Regeneration harvest (even-aged)	1,156
	Intermediate harvest (commercial thin)	1,658
Total Treatments	Planned Fire Ignitions	4,957
	Group Selection	371
	Regeneration harvest (even-aged)	1,156
	Intermediate harvest (commercial thin)	1,978

Table B-2 displays the projected timber sale quantity (for products meeting utilization standards) and the projected wood sale quantity (for products such as fuelwood or biomass that does not meet timber product utilization standards) for lands suitable and not suitable for timber production.

Table B-2. Projected timber sale program, annual average volume outputs for 1st decade of the plan period

Timber Products – Volumes other than salvage or sanitation volumes that meet timber product utilization standards	MMCF	MMBF
A1. Lands suitable for timber production	5.3	25.7
A2. Lands not suitable for timber production	0.5	2.6
Projected Timber Sale Quantity (PTSQ) (A1 + A2)	5.8	28.3
Other Wood Products – Fuelwood, biomass, and other volumes that do not meet timber product utilization standards	MMCF	MMBF
B. All lands	0.4 – 1.2	2 - 6
Projected Wood Sale Quantity (PWSQ) (A + B)	6.2 – 7.0	30.3 – 34.3

As required by the 2012 Planning Rule, the estimates in table B-2 take into account the fiscal capability of the planning unit and are consistent with all plan components. They are based on Flathead NF average budget levels over the past 3 years. However, the estimates of timber outputs may be larger or smaller on an annual basis, or over the life of the plan, if budget or other constraining factors change in the future.

The maximum quantity of timber that may be sold is limited to the sustained yield limit (refer to the Proposed Action, Ecosystem Services, Forest Vegetation Products: Timber section).

Management Strategies and Approaches

Watershed, Riparian Habitat, Aquatic Species, and Soils

Watersheds, habitats, and aquatic species exist within a larger, interconnected hydrological system, which often extends beyond forest management boundaries such as Flathead Lake or even to Canada.

The Flathead NF's plan components for aquatic ecosystem diversity and species diversity involve a two-tiered approach. First, in a coarse filter approach, aquatic ecosystems are managed toward reference conditions, which are approximated by conditions found in watersheds that have experienced minimal human disturbances. The assumption is that managing toward reference conditions would provide the majority of necessary habitat conditions to support the native aquatic species that have evolved here. Due to societal and ecological changes, the Flathead NF cannot be managed to exactly mimic reference conditions, but managing aquatic ecosystems within this context would provide suitable aquatic habitats for native species. A primary mechanism of the coarse filter is the designation of riparian habitat conservation areas (RHCAs). These are areas along streams, lakes, ponds, and other wetland areas that have specific protections in the form of the proposed action's guidelines and suitability designations. In addition, "Montana Best Management Practices" and "Soil and Water Conservation Practices" are implemented to protect or restore water quality under the Clean Water Act. These practices are also considered a key element of the coarse filter.

Second, using a fine filter assessment, species are evaluated to determine limiting habitats, population influences, and whether they have special habitat needs that may not be provided through coarse filter plan components. Fine filter plan components are listed for species in one of the following categories: threatened and endangered species (bull trout), species of conservation concern (westslope cutthroat trout), and species of public interest (grayling, rainbow trout, brook trout). Species identified through the fine filter may need additional protection as specified in conservation strategies for individual species or groups of species. Bull trout is currently listed as a threatened species under the Endangered Species Act. Through the proposed action's plan components, including desired conditions, objectives, standards and guidelines, this species would be anticipated to trend toward recovery and subsequent delisting.

The following subsections present potential management approaches and strategies identified to move these resource areas within the larger landscape toward the specific desired conditions and objectives presented in the proposed action.

The Watershed Condition Framework establishes a systematic process for determining watershed conditions. One of the key elements of the forest plan, in keeping with the Watershed Condition Framework, is the identification of the highest priority areas for restoration. These priority areas are places where site-specific analysis may help us assess site-specific conditions and further prioritize restoration needs. Using this "step-down" approach, we plan to emphasize the following strategies in Flathead forest watersheds with an emphasis in priority watersheds (see appendix E for identification of priority watersheds):

- a. Improving habitat for bull trout and westslope cutthroat trout. (FW-DC-WTR-01, 04, 11; FW-DC-RHCA-01, 02, 03; FW-GDL-RHCA-01-11)
- b. Improving water quality by implementing "Montana Best Management Practices" (BMPs) and "Soil and Water Conservation Practices." (FW-DC-WTR-02; FW-GDL-WTR-03)

- c. Restoring water quality and stream habitats by improving watershed scale processes and through direct riparian and in-channel treatments. (FW-DC-AQH-01,02; FW-DC-AQS-01-05)
- d. Reducing aquatic habitat fragmentation through removal of man-made, native fish migration barriers. Where appropriate, create barriers to prevent invasion of non-native species. (FW-GDL-WTR-04; FW-GDL-IFS-05, 08)
- e. Working toward the delisting of impaired water bodies in cooperation with Montana Department of Environmental Quality (MDEQ) and Environmental Protection Agency (EPA) through water quality assessment, total maximum daily loads (TMDLs), restoration plans, BMP implementation, and monitoring. (FW-DC-WTR-02, 05, 09; FW-GDL-WTR-01)
- f. Cooperating with private land owners and other agencies to improve water quality and restore aquatic ecosystems across multiple ownerships. (FW-DC-P&C- 01-10)
- g. Cooperating with Montana Fish, Wildlife and Parks, organizations, and other agencies to reduce the spread of aquatic invasive species. (FW-DC-P&C-01; FW-DC-AQS-02, 03)
- h. Removal, reconstruction, or improved maintenance of roads located in riparian areas to improve watershed health and reduce sediment delivery to the aquatic ecosystem. (FW-GDL-SOIL-02, 04; FW-GDL-RHCA-09, 11)
- i. Treating upland roads to reduce water interception and reduce landslide risk; (FW-GDL-RHCA-02)
- j. Complete the development of Watershed Restoration Action Plans (WRAPs) for all identified priority watersheds and continue WRAP implementation and identification of essential projects in the Watershed Improvement Tracking database. (FW-DC-WTR-01)
- k. Collaborate with partners to identify additional priority watersheds corresponding to a reasonable and achievable 5-year program of work. (FW-DC-P&C- 01, 02)
- l. Engage with youth and veterans through the 21st Century Conservation Service Corps to accomplish climate-informed restoration work on public lands (i.e., watershed restoration, hazardous fuel reduction). (FW-DC-S&E-03)

Terrestrial Ecosystems and Vegetation

This section presents a list of a wide array of possible strategies that may be used to move toward and/or achieve desired conditions and objectives outlined in the Terrestrial Ecosystem and Vegetation section of the proposed action. The list is not inclusive of all possible strategies, but the most probable strategies that are likely to contribute to achieving objectives. Strategies could include the use of single methods and/or practices, or combinations of methods and practices. However, the specific strategy chosen would depend on numerous factors, such as site-specific forest conditions and other management objectives for the area.

Primary strategies to achieve FW-OBJ-TE&V-01 are the following:

- Regeneration harvest methods, implementing even-aged, two-aged or uneven-aged silvicultural systems (e.g., clearcut, seed tree, shelterwood or group/single tree selection)
- Intermediate harvest methods (e.g., commercial or pre-commercial thinning, sanitation or salvage cut)
- Pruning or daylight thinning of western white pine to reduce incidence of blister rust
- Planting of conifers to reforest areas after harvest or fire

- Use of mechanical methods (e.g., excavator scarification) or prescribed fire to prepare sites for reforestation
- Post-fire salvage harvest or salvage after epidemic insect infestations
- Management of fire (i.e., prescribed fire and wildfire) to achieve desired vegetation structure, composition, pattern and function
- Mechanical treatments including commercial and noncommercial treatments to alter forest structure and fuel loadings.
- Treating insects and disease using integrated pest management practices.

Primary strategies to achieve FW-OBJ-TE&V-02 are the following:

- Removal of understory conifers in aspen or cottonwood plant communities, through cutting or understory trees or use of prescribed fire
- Thinning around individual hardwood trees where of high value
- Retention of hardwood trees to the degree possible within harvest units
- Root-cutting, burning, or cutting of hardwood trees less than 10 inches diameter breast height (d.b.h.) to promote suckering
- Flooding (by beavers) to maintain and regenerate hardwoods and other riparian areas

A primary strategy to achieve FW-OBJ-TE&V-03 is the following:

- Treating invasive weeds, with biological, chemical, or mechanical means, as appropriate.

Primary strategies to achieve FW-OBJ-TE&V-04 are the following:

- Slashing and/or management of fire (i.e., prescribed fire and wildfire) to maintain or create grass/forb/shrub openings
- Revegetation of disturbed sites with native grass/forb/shrub species.

Other silvicultural practices that may be used to move towards or achieve desired conditions:

- Removing slash from the base of snags and other leave trees prior to prescribed burning
- Topping trees to create snags or collect cones
- Cone collection, including caging cones to collect seed (whitebark pine).

The following subsections describe potential management strategies, at both the landscape and stand level, designed to trend towards desired conditions for the terrestrial ecosystem, vegetation and wildlife species presented in the proposed action. Refer also to appendix A of this proposed action for information on biophysical settings and species habitat associations.

Coniferous Forest Types

This section provides guidance and clarification for forest plan components (desired conditions, objectives, standards and guidelines) related to coniferous forest types and the associated wildlife habitat.

General Strategies

The following strategies would be considered during landscape and stand level project analyses to meet or trend toward achieving desired conditions for forest size classes, species composition, patterns, and structures:

- Evaluate areas proposed for vegetation management activities for the presence of occupied or suitable habitat for threatened and endangered plant species. If needed, based on pre-field review, conduct field surveys and provide mitigation or protection to maintain occurrences or habitats that are important for species sustainability.
- Complete effectiveness evaluations of fuel treatments to better understand how hazardous fuels treatments affect wildfire behavior, fire severity and fire suppression effectiveness.
- Thin in immature stands where it would improve individual tree and stand growth rates. These may be stands currently in sapling, small or medium tree size classes.
- Where treatment and site conditions are suitable, promote increase of the following species in stand and landscape level prescriptions:
 - ◆ For ponderosa pine, especially on the warm dry biophysical setting, planting if often needed to ensure its successful establishment.
 - ◆ For western larch, especially on the warm moist and cool moist to mod dry biophysical settings, planting may be needed to ensure successful establishment, if a reliable seed source is not present. Thinning in the sapling stage may also be needed to ensure continued presence and growth.
 - ◆ For rust-resistant western white pine, especially on the warm moist biophysical setting, restoration activities may include creating suitable sites for western white pine establishment and growth through harvest, burning or mechanical site preparation; planting of rust-resistant seedlings; thinning; and pruning of young sapling trees.
 - ◆ For western red cedar, focus on the sites where it currently or has the potential to achieve larger sizes and, possibly, late successional or old growth habitat in the future.
 - ◆ For whitebark pine, use a variety of restoration treatments, e.g., planting, thinning, and fuel reduction, in stands that contain phenotypically rust-resistant trees.

Strategies for forest pattern, patch sizes

Analyses of the natural range of variation (NRV) indicate that the range in variation of early successional seedling/sapling forest patch sizes is naturally very wide in the ecosystems of the Flathead NF, due to the predominance of moderate and high severity fire disturbance regimes (refer to the Assessment of the Flathead NF¹ for details on this analysis). The proposed action includes components that address desired forest patterns and patch sizes, particularly related to early successional seedling/sapling dominated openings across the landscape. Current average patch sizes are considerably lower than the NRV in some areas of the forest (refer to (FW-DC-TE&V-11). In other areas, average patch sizes are consistent with NRV, mainly due to the effects of recent (within past 15 years) wildfires.

Early successional forest openings dominated by seedling/sapling trees transition relatively quickly out of this condition and into mid-successional stands, with larger trees and dense forest canopies. This may

¹ 3. USDA, Forest Service. 2014. Assessment of the Flathead National Forest. Available online at www.fs.usda.gov/goto/flathead/fpr.

occur 30 to 40 years after the disturbance that established the new forest. Stands can remain in this mid-successional, closed canopy, densely forested condition for many decades, or centuries, without disturbance. Both fire (prescribed and wildfire) and timber harvest can be tools for maintaining and creating desired amount and distribution of young, early successional forest patches.

Application of the standard specifying maximum opening size for timber harvest

Standards for timber harvest in the proposed action include an exception to the 40 acre maximum opening size for regeneration harvest units (FW-STD-ECOS TIMB-07). The standard is consistent with the average opening size created under the natural disturbance regime in the ecosystem, and is designed to facilitate the maintenance or trend towards the desired conditions for forest pattern and patch sizes.

For the warm dry and warm moist biophysical settings, the standard is set at the lower end of the NRV average patch size in consideration of where the lands suitable for timber production within these biophysical settings are located. These settings lie in the lower elevation areas of the forest, often in areas of intermingled ownerships and nearer to homes and communities. These settings tend to have higher concentrations of roads and are more easily accessible to people for recreation and other human activities. Big game winter range areas lie within these biophysical settings. Though a trend towards larger patches is desired, these other factors could influence the size of openings created in a harvest operation. The maximum opening size is also set at the lower end of the NRV range for the cool moist-mod dry and the cold biophysical settings. This is in consideration of the current conditions, which is near the NRV average due to recent fires, and the expected future emphasis on use of fire (both prescribed and wildfire) to maintain/create early successional forest patches within these landscapes. In all cases, application of the maximum opening size standard would be evaluated at the project level through an interdisciplinary analysis, considering the desired conditions for other resources and site-specific issues and conditions.

Following are strategies to consider during project level analysis, at both the landscape and stand level, to trend toward or maintain desired conditions for forest patterns and patch sizes:

Trend towards creation of larger opening sizes across landscapes where analysis has indicated that the size and/or pattern of openings is not consistent with what would have occurred historically under the NRV. Larger openings have less edge per unit area, which is desirable for wildlife species that avoid edge habitats or experience greater mortality near edge habitats.

Management strategies to create larger patch sizes across the landscape could include:

- Retaining additional forest structural components within larger regeneration harvest areas to provide greater short and long-term structural diversity and provide a more visually pleasing landscape. This strategy could include leaving patches of uncut forest or individual/small groups of live trees distributed throughout the harvest openings and also may include retaining greater numbers of snags.
- To lessen the visual impact, larger harvest openings can have irregular shapes that are blended to the natural terrain. Retention of individual or patches of trees within the opening would also create a more visually pleasing appearance.
- Locate new harvest openings immediately adjacent to existing patches of sapling size trees. This initially creates a larger patch of early successional forest, where trees are of the same cohort (i.e., ages are within 20 years of each other), while lessening potential concerns related to larger openings.
- Location of larger units is a key consideration. When determining where a larger opening might be created, consider factors such as: wildlife security (e.g., adjacency to open roads or viewpoints); visibility from areas with high level of public use; desired conditions related to potential fire behavior

and fuel loadings; watershed conditions related to water yields; big game winter range desired conditions.

- Consider desired conditions for development of future late successional and old growth forests. Larger patches of young, seedling/sapling forests can eventually develop into larger patches of old growth or late successional forest over time, which is a desired long term condition for the ecosystem (FW-DC-TE&V-18).
- For projects planned in the Swan Valley, unit location and treatment prescriptions could consider the long-term desired condition to create more “natural” forest patterns, patch sizes, and shapes across the landscape, and reduce the checkerboard pattern caused by the arrangement of past land ownerships. An example of a method to accomplish this strategy would be to create new, irregular shaped harvest openings adjacent to existing seedling/sapling stands that have a straight edge, to make the total opening blend in with the surrounding landscape.
- Maintain connectivity for wildlife species associated with forest interior conditions. An example of a method to accomplish this strategy would be to retain patches of trees with an average d.b.h. of at least 5 inches that are shaped so that a large portion of the patch is more than 100 meters from the edge (of a stand with an average d.b.h. of less than 5 inches). This can be determined by taking the forest patch that is greater than 5 inches average d.b.h. and using the geographic information system (GIS) spatial buffer analysis tool to do create an interior buffer of 100 meters.

Old Growth/Late Successional Forests

This section provides strategies for FW-DC-TE&V-13, FW-GDL-TE&V-05, and FW-GDL-TE&V-06.

Old growth, as referenced in the proposed action, is defined by specific structural attributes and other characteristics as described in the Forest Service publication, Old growth forest types of the Northern Region.² In the Flathead NF, old growth forests are not usually in a fully climax successional stage, because of the presence and persistence of early successional species within the stand. The largest, oldest trees within stands are typically long-lived, fire tolerant western larch, ponderosa pine or Douglas-fir, which may have survived repeated wildfires.

Landscape or Watershed Level

In areas where it is desirable to alter old growth forest conditions at the watershed level (e.g., the size, shape, structure and connectivity of old growth forest patches), a possible management strategy may include the following:

- When planning timber harvest, retain stands adjacent to existing old growth forest stands that would provide future old growth in the shortest time frame possible. Selection of forest stands for development of future old growth may be emphasized in watersheds where existing old growth acres are less than the desired conditions at the forest-wide scale; where shape of old growth patches is largely linear and narrow; where individual patches of old growth are relatively small (e.g., average less than 100 acres), and/or where connectivity of patches is poor. Examples strategies to develop future old growth are listed under the following, Stand Level, section.

² Green, P., J.Joy, D.Sirucek, W.Hann, A.Xack, and B.Naumann. 1992. Old growth forest types of the Northern Region. Errata corrected 2005, 2007, 2008, 2011. USDA Forest Service, Northern Region Document Number R-1 SES 4/92. Missoula, MT. 609 pgs.

Stand Level

Promote development of future old growth or late successional forest structure. Any stand where current or potential tree growth, species composition, or other forest components are conducive to development of old growth forest over time may be considered for prescriptions to encourage that development.

Example prescriptions include:

- Managing mature or late successional forests that do not meet *all of* the Greene and other's (1992) criteria for old growth, but have characteristics of old growth that are important for wildlife (e.g., large live trees with heart rot for nesting and denning, medium-sized live trees to provide bird feeding perches, larger snags, favorable species composition, and diverse stand structures). These stands may be retained or may have vegetation treatments to make them more resilient to fire or climate change. For example, timber harvest could occur within these stands to remove intermediate canopy trees and reduce ladder fuels or to reduce the basal area of remaining trees to make them more resistant to insect infestation or drought.
- Retaining overstory trees and selectively thinning young understory trees in previously harvested stands that contain residual large trees. These may be past seedtree or shelterwood cuts.
- Long-term retention of live leave trees within new harvest units, as well as in salvage units in burn areas. These may be healthy immature or mature trees with good growth rates, with good potential to achieve larger size classes over shorter time periods. They may be large trees with heartrot fungi, wounds, or broken tops that predispose them to dying in the future.
- Retention of snags, especially large snags, both soft and hard, arranged as solitary trees or in small clumps. In areas which are lacking the minimum number of snags specified in the guidelines, techniques to create nesting/denning habitat can be used such as girdling or topping, and/or installation of artificial structures such as nest boxes/platforms.
- Leaving the largest live, diseased, or dead trees available in timber harvest units, to meet the needs of a larger number of wildlife species.
- To protect trees that have been retained in harvest units, using "wildlife tree" signs and/or clearing fuels beneath leave trees in units that will have slash treated with prescribed fire.
- In wildland-urban interface (WUI) or areas that do not provide mature multi-storied hare/lynx habitat, clearing trees and other fuels around the base of "legacy trees" (e.g., large, old western larch or ponderosa pine trees exceeding 25 inches d.b.h.) to increase their resilience to climate change, fire and other disturbances.
- Using modified thinning prescriptions in young stands of seedling/sapling or small tree sizes where species composition and stand structure are favorable for relatively rapid development of desirable future old growth structures.
- An example of a strategy that may occur to address the maintenance or development of old growth or late successional forest to restore historic stand structure and improve habitat for associated bird species could occur within ponderosa pine stands. Prescribed fire, harvest, and/or thinning could be used to create a small-patch mosaic of grassy openings, shrubs, dense patches of saplings, very large live trees, and large snags. Snags would be arranged singly as well as in clumps, to provide habitat for species such as flammulated owls, mountain bluebirds, pygmy nuthatches, and Williamson's sapsuckers.

Burned Forests

This section provides strategies for FW-DC-TE&V-14, 15, 16.

Black-backed woodpeckers (BBWO) are closely associated with intensively burned areas that have at least 50 percent crown closure prior to wildfire. Following wildfire, use of burned areas by BBWO changes over time and they move from areas where trees have died immediately after fire, to areas where trees die slowly after fire, to unburned areas. Example strategies that could be used when considering post-fire salvage harvest of wildfire areas include:

- At a landscape scale maintain contiguous, moderate to intensively burned forest patches
- In addition to dead trees, retain live trees that are scorched because they die over a longer period of time, helping to maintain higher populations of black-backed woodpeckers.
- Retain a range of snag species preferably with a minimum d.b.h. greater than 10 inches d.b.h. for nesting.
- Retain clumps of trees, including both nest trees and trees with high densities of wood-boring beetles for feeding, because food sources near nest trees appear to be limiting to BBWO populations
- Retain snags in the interior of the fire area, if possible, where snags would not be susceptible to loss due to firewood cutting.

Strategies for Each Biophysical Setting

This section provides some additional strategies that could be applied, specific to each biophysical setting.

Warm dry

In the warm, dry biophysical setting, vegetation management strategies would focus on maintaining or increasing representation of early seral, shade-intolerant, drought and fire tolerant, insect/disease resistant species. Specific activities could include timber harvest, prescribed fire, planting, pre-commercial thinning, and commercial thinning.

- Thin young stands to encourage growth and vigor of trees, and develop future large diameter ponderosa pine, western larch and Douglas-fir. This creates forest compositions and structures better able to survive future fire, insects, disease, drought and other disturbances, and provide seed sources for future forest regeneration after disturbance.
- Favor the retention and increase proportions of ponderosa pine on all sites, and western larch on the more mesic sites.
- Reduce stand densities and inter-tree competition to increase resilience to drought that may be associated with future climates and to meet desired conditions with respect to fire behavior.
- Trend towards an increase in the average patch size of early successional forest. This may be accomplished through regeneration harvest or prescribed burning.
- Retain ponderosa pine and Douglas-fir live trees and snags, greater than 20 inches d.b.h. where available. Use timber harvest and prescribed fire to create a landscape mosaic with a variety of canopy cover classes, dense understory thickets of trees and shrubs, and gaps in the forest canopy. Leave these understory thickets in areas where they would not act as ladder fuels that carry fire into crowns of trees.

Warm moist

Within the Flathead's warm-moist biophysical setting, vegetation treatment selections would generally favor the retention and increase of western larch, rust-resistant western white pine, ponderosa pine, and cedar on the more mesic sites. Specific activities include timber harvest, prescribed fire, planting, pre-commercial thinning, and commercial thinning, consistent with big game winter range desired conditions.

- Thin young stands to encourage growth and vigor of trees, and develop future large diameter western larch, Douglas-fir, western white pine and ponderosa pine. This creates forest compositions and structures better able to survive future fire, insects, disease, drought and other disturbances, and provide seed sources for future forest regeneration after disturbance.
- Conserve existing large live trees and snags, greater than 20 inches d.b.h. where available.
- Trend towards an increase in the average patch size of early successional forest. This may be accomplished through regeneration harvest or prescribed burning.
- Reduce stand densities and inter-tree competition to increase resilience to expected future climates and to meet desired conditions with respect to fire behavior.
- In cedar-hemlock sites, where it is desired to encourage presence of these species, maintain overstory shade to protect understory trees, while reducing stand densities overall to promote tree growth and development into larger diameter future trees.
- Protect existing old cedar groves by management of surrounding stands to lower risk of future high severity fire. This may include reducing tree densities and downed woody material.
- Promote increase in presence of western white pine by planting in harvest units or areas burned by fire, and thinning/pruning in existing sapling stands.

Cool moist-moderately dry

Within the Flathead's cool-moist to mod dry biophysical setting, vegetation treatment selections would generally favor the retention and increase of western larch and Douglas-fir, and of rust-resistant western white pine in the overstory on the more mesic and warm sites within this setting.

- Thin young stands to encourage growth and vigor of trees, and develop future large diameter western larch, Douglas-fir and western white pine in the upper canopy layers, while retaining sub-alpine fir and spruce in the understory. This creates forest compositions and structures better able to survive future fire, insects, disease, drought and other disturbances, and provide seed sources for future forest regeneration after disturbance.
- Conserve existing large live trees and snags, greater than 20 inches d.b.h. where available.
- In the WUI, or in the stem exclusion structural stage, reduce stand densities and inter-tree competition to increase resilience to expected future climates and to meet desired conditions with respect to fire behavior. In other areas, increase the presence of western larch, particularly as larger tree components and in overstory canopy layers, and in areas dominated by lodgepole pine, to promote species tolerant of insects, disease and fire and with the potential to provide high quality habitat for cavity nesting/denning species.
- To increase forest structure and species diversity, create openings in areas of moderately to densely stocked mid-successional forest, particularly areas dominated by lodgepole pine. Regenerate to fire tolerant species, especially western larch or western white pine (where suited).

Cold

Within the Flathead's cold biophysical setting, vegetation treatment strategies would generally favor the retention and increase of whitebark pine. Whitebark pine trees and stands that contain phenotypically resistant trees would be identified for potential cone collection, seed production for natural regeneration, scion collection, or other purposes for the whitebark pine restoration program. Strategies that may be used include:

- Reducing stand density and fuels by thinning/felling of trees, to improve resilience of stand and lower fire hazard.
- Insect control activities, such as application of pheromones packets
- Thinning of sapling or larger sized whitebark pine stands
- Identification and collection of seed from phenotypically superior trees
- Planting whitebark pine seedlings
- Prescribed burning on sites that best support whitebark pine establishment and growth (either natural regeneration-seed caching by Clark's nutcracker, or by planting).

Non-coniferous Plant Communities—Hardwood tree and grass/forb/shrub communities

Potential strategies (for FW-DC-TE&V-17) to increase the presence of hardwood trees may include:

- Creating suitable sites for hardwood establishment and growth through prescribed burning, mechanical treatment to promote root sprouting; pre-commercial and commercial thinning activities; maintenance of variable stream flows; and maintenance and/or reintroduction of beavers.
- Planting of hardwood seedlings and/or stems.
- Retaining vegetation adjacent to large cottonwood trees if needed to help prevent blowdown.
- Retaining cottonwood trees in largest size classes to provide nest sites for species such as Pileated woodpeckers or Great-blue herons and provide den sites for fishers and black bears.

Threatened Wildlife Species

The 2012 planning rule adopts a complementary ecosystem and species-specific approach to provide for the diversity of plant and animal communities and the long-term persistence of native species in the plan area, known as a coarse-filter/fine-filter approach. The coarse-filter plan components are designed to maintain or restore ecological conditions for ecosystem integrity and ecosystem diversity in the plan area within Agency authority and the inherent capability of the land. Additional species-specific or fine-filter plan components provide for additional specific habitat needs, when those needs are not met through the coarse filter plan components. The following subsections provide possible strategies for threatened wildlife species (also see strategies identified for Terrestrial Ecosystem and Vegetation Management, Fire Management, Terrestrial Plants; Watershed, Riparian Habitat, and Aquatic Species).

Canada lynx habitat and/or critical habitat

This section provides strategies for FW-DC-TE&V-03; FW-DC-TE&V-04; FW-DC-TE&V-11; FW-DC-TE&V-12; FW-DC-TE&V-23; FW-STD-TE&V-02; FW-STD-TE&V-03; FW-STD-TE&V-04; FW-STD-TE&V-05; FW-STD-TE&V-06

The critical habitat primary constituent element for Canada lynx would be available at a landscape scale, changing over time as a result of fire, forest succession, timber harvest and other vegetation management techniques that create a mosaic of structural stages and species compositions. National Forest System (NFS) lands in the warm dry biophysical setting provide matrix habitat for lynx, if within the area mapped as lynx critical habitat. The warm moist, cool moist to moderately dry, and cold biophysical settings may provide lynx foraging or denning habitat, where appropriate forest stand structures and elevations occur.

At any given point in time, some forested stands in mapped lynx habitat would provide lynx habitat in a suitable condition and some would not. Timber harvest and prescribed burning may be used to create lynx habitat in a suitable condition, for example:

- Timber harvest methods could include regeneration harvest, group selection or intermediate harvest methods, in the stem exclusion structural stage or in multi-story stands that currently do not provide hare habitat. Prescriptions would be designed to favor dense regrowth of coniferous trees and shrub species such as willow (*Salix sp.*), alder (*Alnus sp.*), globe huckleberry (*Vaccinium globulare*) and Pacific yew (*Taxus brevifolia*). Treatments would be determined by site-specific analysis of potential vegetation types and current vegetation conditions at the forest stand and lynx analysis unit (LAU) scale.
- Salvage harvest could be conducted in areas that currently do not provide hare habitat.

In some forested stands within mapped lynx habitat that have been recently harvested or burned, pre-commercial thinning may occur to promote development of future mature multi-storied winter snowshoe hare habitat. The location and amount of pre-commercial thinning would be based upon an analysis of vegetation conditions at the LAU scale and would be guided by the best available scientific information.

Vegetation management strategies could be used to promote mature multi-story hare habitat, to increase resilience to expected future climates, and to meet desired conditions with respect to fire behavior. Methods to create mature multi-story hare habitat include modified thinning techniques in young (seedling/sapling) stands which change the future forest structure and composition in ways that create winter snowshoe hare and lynx habitat (see FW-STD-TE&V-05, Exception #7). Examples of modified thinning techniques include the following:

- One example of a modified pre-commercial thinning prescription may occur in coniferous forest stands in the stand initiation structural stage, where there is Engelmann spruce and sub-alpine fir mixed with western larch and/or Douglas-fir. The taller trees (typically shade-intolerant species, such as western larch or Douglas-fir) may be thinned to a relatively wide spacing (i.e., 15 feet or more average spacing) and the shorter trees (typically shade-tolerant species, such as subalpine fir and Engelmann spruce) left unthinned. An example of a means to implement this prescription might be to require all trees below a certain height, such as six feet, to be retained, and thinning only the tree layer that is over six feet tall. This thinning method increases the growing space and sunlight received by all trees in the stand, allowing the subalpine fir and spruce to establish and flourish in lower canopy tree layers, while also developing an upper canopy of western larch and/or Douglas-fir with improved growth and vigor. This promotes development into mature multi-storied forest that can provide winter snowshoe hare and lynx habitat in the long-term. Field examinations of forest stands that were thinned using this method in the 1980s have shown that these stands developed a multi-storied stand structure in a shorter time frame than they would have without thinning. Lynx telemetry data on the Forest shows that stands thinned in the 1980s are being used by Canada lynx in winter. Since western larch and Douglas-fir are adapted to surviving fire if they reach a large enough size between wildfires (and sub-alpine fir or Engelmann spruce are not adapted to surviving fire), this strategy could help to maintain greater structural and species diversity over time, even if wildfires become more frequent. If species such as western larch are able to grow to large sizes and survive repeated fires, they can provide key habitat for a wide variety of bird species.
- Another example of a modified thinning prescription may occur in areas of the forest where there have been recent large, intense wildfires covering thousands of contiguous acres. Large portions of these wildfire areas are now regenerating with 14,000 to 50,000 lodgepole pine and/or western larch stems per acre, creating extremely dense forest conditions. These extremely dense stands may initially provide snowshoe hare habitat, but very quickly grow into the stem exclusion structural stage, where

they do not have lower live limbs providing forage for snowshoe hares. Extremely high tree densities also retard establishment and growth of an understory tree and/or shrub layer. Portions of these large burned areas could be pre-commercially or mechanically thinned using the “patch cut” method described by Bull and others (2005)³. This would create a mosaic across the landscape, composed of patches of different tree sizes. Bull found that this pre-commercial thinning method resulted in snowshoe hare abundance that was significantly higher after thinning than before. In addition, field examination of areas on the Flathead NF burned in the Red Bench fire of 1988 have shown that pre-commercial thinning of extremely dense lodgepole pine stands prolongs the time that trees retain their lower live limbs and allows ingrowth of new shrubs and/or conifers. Pre-commercial thinning can help to maintain branches at the snow surface, prolonging the period that the stand provides winter snowshoe hare foraging habitat, as well as providing forage for a variety of other wildlife species such as moose, elk and deer.

Grizzly bear habitat

This section provides strategies for FW-DC-TE&V-01; FW-DC-TE&V-02; FW-DC-TE&V-04; FW-DC-TE&V-11; FW-DC-WL-01

- Grizzly habitat quality may be improved through vegetation management activities including fire, timber harvest and other vegetation management techniques that create a mosaic of successional stages, stand structures, and species compositions. Sale area improvement and restoration may include methods and prescriptions to promote growth of grizzly bear foods, where appropriate. In appropriate locations and habitat types, vegetation management activities can increase light available for berry-producing shrubs that bears use for food, increasing their berry production. Examples of berry-producing shrubs include, but are not limited to, huckleberries (*Vaccinium globulare*, *Vaccinium membranaceum*), serviceberries (*Amelanchier alnifolia*), mountain ash (*Sorbus scopulina*), and buffaloberry (*Shepherdia Canadensis*).
- Where there is an intent to promote growth of grizzly bear foods, desirable regeneration harvest and slash disposal methods include options such as: (1) methods to minimize the distance to cover (e.g., oblong or irregularly shaped harvest units, retention of one or more leave patches in units larger than 10 acres that won't be broadcast burned); (2) minimum soil scarification in habitat types where soil disturbance impedes the reestablishment of grizzly foods; (3) slash disposal by broadcast burning or whole-tree yarding to maintain or improve grizzly foods in suitable habitat types and terrain; and (4) protection of hydric stream bottoms, wet meadows, marshes, and bogs from soil disturbance and excessive cover removal.
- To reduce human-bear conflicts, bear education personnel could inform the public, contractors, and agency employees about conflict reduction techniques and monitor/enforce the Food/Wildlife Storage Order(s).

Strategies for Other Wildlife Species

Potential species-specific strategies to move toward desired conditions for terrestrial wildlife species may include the following:

- Where cottonwood trees are actively used by nesting colonies of great-blue herons, maintain a buffer zone from the periphery of colonies to reduce disturbance during the nesting season.

³ Bull, Evelyn L., Thad W. Heater, Abe A. Clark, Jay F. Shepherd, and Arlene K. Blumton. 2005. Influence of Precommercial Thinning on Snowshoe Hares. USDA Forest Service Research Paper PNW-RP-562. 16 pages,

- Work cooperatively with other federal agencies, the Montana Natural Heritage Program, and Montana Fish, Wildlife and Parks (MTFWP) to monitor potential and known loon nesting lakes. At potential or active common loon nest sites, nests could be protected by using loon education personnel, shoreline signs, or floating signs and/or nesting platforms, in cooperation with others, such as the Common Loon Working Group.
- Work cooperatively with researchers and educational caving clubs to inventory caves for bats. Work cooperatively with other agencies and organizations, such as the Montana Natural Heritage Program and MTFWP, to monitor aquatic and riparian habitats for bats using mist-netting and/or acoustic surveys. To reduce the risk of white-nose syndrome in bats, inform the public and cave inventory personnel of proper decontamination techniques. If bridge replacement or cave closure or building removal is proposed, evaluate the structure for the presence of bat species of conservation concern prior to closure and mitigate as needed (e.g., install bat-friendly gates or roosting structures).
- Cooperate in interagency, non-government organizations, and citizen science survey efforts for species associated with alpine-subalpine habitats (e.g., wolverine, White-tailed ptarmigan, Gray-crowned rosy finch, pika, and hoary marmot) that may be susceptible to effects of climate change.
- Participate in cooperative efforts to survey waterfalls that provide potential breeding sites for Black swifts to determine species presence and habitat condition, including canopy shading and water flow throughout the nesting season.
- Participate in cooperative efforts to survey swiftly flowing mountain streams with characteristics that can provide habitat for harlequin ducks for presence of harlequin ducks during the nesting and brood rearing seasons. Maintain dense vegetation and/or high densities of down logs adjacent to stream reaches with known harlequin duck nesting sites to provide cover, protection from disturbance, and protection from predators.
- In areas mapped as white-tailed deer winter habitat by MTFWP, strategies include removal of trees in the understory and mid-story using fire or timber harvest, provided that a sufficiently dense canopy remains to provide snow intercept cover. The density of trees needed to provide snow intercept cover varies according to tree species composition and elevation. Also, provide dense thickets in the understory to provide wind protection and arboreal lichens for feeding, where it does not conflict with fire management desired conditions.
- Activities in grass-forb-shrub habitats may include slashing small conifers around the perimeter of openings and/or burning to reduce conifer densities and promote resprouting/seeding of new plants.
- Biological and chemical treatments could be used to control invasive plants in grass-forb-shrub habitats, especially in elk winter-spring habitats;
- In cooperation with MTFWP objectives for each hunting district, balance elk security with hunter access through road management.
- Use a combination of GIS analysis techniques and available wildlife habitat models, and field survey to design site-specific vegetation treatments.
- Cooperate in continued citizen science efforts to monitor birds of prey.

Fire Management

Fire management strategies would be those that are anticipated to restore fire-adapted landscapes; reduce risk to people, communities and values; support the three objectives of the National Cohesive Wildland Fire Management Strategy; restore resilient landscapes; maintain fire adapted communities; and provide

for effective, safe fire response; and address climate change through landscape-scale collaboration and coordination.

Wildland fire and fuels management strategies would emphasize hazard fuels reduction to mitigate the risk of wildfire to communities and important values in the WUI. Restoration projects would be integrated to include hazardous fuel treatments that help restore fire resilient ecosystems in support of restoration goals and the National Wildland Fire Cohesive Strategy.

Management Approaches for Unplanned Ignitions

Potential strategies for fire management (unplanned ignitions, wildfire) could include the following:

- Assessment of risk can occur at multiple scales, both spatial and temporal. These assessments are grounded in experience and analyzed with data and models appropriate to the scale of analysis. Risk assessments could include the following elements:
 - ◆ Analyzing the existing conditions that change only in the 5–10 year time frame and informs broad questions and decisions for programmatic risk assessments.
 - ◆ Utilizing components such as seasonal weather, fuels condition, drought impacts to inform decisions as fire season evolves for annual risk assessments.
 - ◆ Utilizing the now known condition, location, etc., to specifically analyze the situation for incident risk assessments.
- Communicating and collaborating with appropriate agency(s) leadership during fire incident management, for wildfires that affect identified areas of local, state or tribal importance, to identify and, to the extent practical, protect these values and minimize impacts to resources or areas of importance.

Management Approaches for Prescribed Fires (Planned Ignitions)

Potential strategies that could be used to trend toward desired conditions and objectives for prescribed fire management include the following:

- Burning in autumn when grasses and shrubs have initiated dormancy to promote resprouting of species such as willows, serviceberry, and maple to provide food for wildlife species. At a landscape scale, retaining unburned areas over at least 50 percent of a winter range herd unit to provide forage for the upcoming winter.
- Using burning prescriptions that maintain the deep duff layer to promote survival of huckleberry plants, if present.
- Using burning prescriptions that are relatively hot to scarify the seed of redstem ceanothus, if present.
- Conducting education/outreach to communities.
- Supporting air quality related value monitoring activities and determination of sensitive indicators for the wilderness areas.
- Reviewing all projects and management activities that may affect air quality related values.
- Reviewing local external sources that cause deterioration of air quality related values and make recommendations to appropriate authorities.

Recreation

Potential management strategies are those that assist in providing a range of recreation opportunities across the Forest while controlling visitor impacts to resources and other visitors; constructing, maintaining and controlling use of facilities and trails; and providing a positive visitor experience. Potential strategies include the following:

- Prioritizing reconstruction of campgrounds based on the Forest's recreation niche and the updated recreation site facility master planning document. Aligning and right sizing recreation infrastructure to complement regional and forest niche.
- Evaluating potential for new over-snow opportunities and evaluating areas for restricting over-snow opportunities.
- Developing a comprehensive river management plan (CRMP) for the Flathead Wild and Scenic River. Coordinating with appropriate State and Federal agencies when developing and implementing the CRMP.
- Completing a needs assessment to determine new outfitter, guide, and livery service on the Forest, outside designated wilderness.
- Evaluating the need and location for a hut to hut system on the forest. Work with partners on funding needs.
- Informing and educating users about Leave No Trace techniques for responsible, outdoor activities with minimal impacts on NFS lands.
- Integrating the recreational opportunity spectrum into project level designs and management decisions.
- During consideration of dispersed campsites with erosion or sanitation issues for rehabilitation, focus on sites that would protect or maintain wild and scenic river corridors, bull trout habitat, or that are within the grizzly bear primary conservation area.
- During consideration of developed campgrounds to improve, focus on improvements that address accessibility, health and safety, type of use, and reduction of grizzly bear-human interaction.
- Integrating the scenic integrity objectives into project level designs and management decisions.
- Consider protecting, or maintaining, historic character and meeting public needs when identifying cabins to put on the National Reservation System.

Wilderness

Potential strategies for wilderness include the following:

- Revising existing wilderness management plan for the Mission Mountains Wilderness and coordinating with the Confederate Salish Kootenai Tribe when revising. Developing limits of acceptable change plan through public participation.
- Implementing the National wilderness stewardship performance measures and wilderness character monitoring.

Infrastructure

The overall maintenance strategy for NFS roads is to efficiently maintain NFS roads and reduce the backlog of deferred maintenance. Specific elements of this strategy could include the following:

- Store infrequently used roads for the long-term.
- Reduce maintenance levels on low-use roads while maintaining road drainage features.
- Shift roads with high residential access needs to non-Forest Service jurisdictions.
- Improve, close, or decommission roads that have adverse impacts on aquatics, watersheds, wildlife.
- Apply dust abatement treatments during weather conditions that promote the binding of treatments to road surface materials.
- When placing road segments in intermittent stored service, at stream crossings consider:
 - ♦ Replacing or removing culverts or drainage structures that do not meet size or capacity requirements
 - If removing a culvert, excavation to natural stream grade could be performed and side slopes could be excavated to natural gradient or 1:1, whichever is less
 - ♦ Constructing armored overflow channels if culverts are retained
 - ♦ Stabilizing areas prone to erosion and/or cut and fill failure
- Complete a trails assessment that uses a systematic approach to define the Forest's desired and sustainable trail system.
- During project-level NEPA, identify forest system trails for mitigation measures to protect the trail tread.
- Identify the trail corridor and associated features for the Pacific Northwest National Scenic Trail Comprehensive Management Plan.
- Use the Travel Analysis Plan to inform project-level decisions.

Lands

Strategies for land adjustments could include the following:

- Adjusting land ownership through purchase, exchange or other authority, to protect resources and improve efficiency of management.
- Considering the following criteria (not presented in any particular order) when evaluating land adjustments:
 - ♦ Lands that can contribute to recovery of threatened or endangered species.
 - ♦ Lands important for wildlife connectivity and big game winter range.
 - ♦ Lands needed for the protection of important historical or cultural resources.
 - ♦ Lands that enhance recreation, public access, and protection of aesthetic values.
 - ♦ Lands that contain rivers with potential for Wild and Scenic designation.
 - ♦ Other environmentally sensitive lands.
 - ♦ Lands that reduce expenses and support more logical and efficient management.
- Considering the following criteria (not presented in any particular order) when evaluating land adjustments for conveyance:
 - ♦ Lands and administrative buildings adjacent to communities that are chiefly valuable for non-NFS uses.

- ◆ Lands with low resource value.
- ◆ Inaccessible, isolated, or intermingled ownership parcels.
- ◆ Lands with long-term special use permits non consistent with national forest purposes and character.
- ◆ Lands not logical and efficient to manage.
- ◆ Lands eligible under the Small Tracts Act.
- Prioritizing NFS land boundaries surveys to areas where trespass is most likely.
- Identifying areas generally suitable for utility corridors and communication sites.
- Authorizing and administering appropriate occupancy and use of NFS lands.

Research and Education

Strategies for research and education could include the following:

- Developing a forestwide conservation education, interpretive and visitor information strategic plan to guide program delivery, ensure coordinated and effective services, and build strong relationships with partners and communities
- Using diverse methods and media for program delivery and making best use of new technologies to help maintain audience relevancy in the areas of social media, web/internet presence, self-guided media using smart phones and other devices

Cultural Resources

The cultural resources strategy could include the following elements:

- Relying on a strong heritage program to fulfill the Forest's legal obligation for public outreach and education about heritage resources.
- Conducting surveys to identify sites, and follow-up actions necessary to protect, stabilize, or salvage sites.
- Identifying and evaluating cultural resources for the National Register of Historic Places.
- Using partnership arrangements to help preserve and interpret significant heritage resources.
- Guiding project planning and heritage preservation/interpretation efforts with knowledge and information gained through inventories, site evaluations, tribal consultation, and other sources.
- Developing and participating in national, regional, interregional, and interagency programmatic agreements and memoranda with the State Historic Preservation Office, the Advisory Council on Historic Preservation, and other partner agencies and Tribes.
- Stabilizing, rehabilitating, restoring, and caring for cultural resources.
- Conducting maintenance to historic facilities.
- Promoting heritage values through public education, outreach, and interpretative programs.
- Conducting scientific and historic research on cultural resources.

Minerals

The minerals strategy could include the following elements:

- Providing mineral materials such as gravel, rip-rap, and landscape rock for Forest Service, personal, interagency, and limited commercial sales in accordance with material source development and rehabilitation plans.
- Managing the exploration, development and reclamation of mineral resource development including locatable mining claims and currently suspended oil and gas leases.
- Identifying, evaluating, mapping, inventorying, and nominating as significant all known cave resources not previously designated as significant.
- Evaluating and mitigating geologic hazards associated with the location and construction of new facilities before they are approved, designed, and constructed.
- Managing caves to minimize evidence of human use and to protect cave resources. Partnerships and mutually-supported agreements could be used to specify schedules, party sizes, skills required, equipment, and handling. Pursue funding and partnerships to manage the cave resources.
- Inspecting minerals materials
- Responding to proposed minerals activities (both locatable and leasable) in a timely manner.

Livestock Grazing

The general approach to grazing management implements resource management practices to maintain the health of all occupied livestock grazing allotments and rangelands. Strategies for accomplishing this approach could include the following:

- Assessing and updating allotment management plans to ensure that sustainable stocking levels, forage utilization standards, mitigation measures, and appropriate grazing systems are used and that lands are still suitable for livestock grazing.
- Eliminating grazing allotments or pastures as they become vacant if there is no demand for livestock forage or if desired vegetation conditions cannot be met.

Special Forest Products

To lessen impacts on huckleberry plants, the following approaches may be considered:

- Within harvest units, use logging and site preparation methods that lessen mechanical disturbance to roots and root crowns of huckleberry plants.
- Leaving greater density of overstory trees (i.e., 20+ mature trees per acre) within units on drier, more exposed aspects may improve conditions for huckleberry growth and berry production.